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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,113	12/19/2001	Jaime E. Ramirez-Vick	25527-0001 CI	2617

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EXAMINER

KIM, YOUNG J

ART UNIT	PAPER NUMBER
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1637

DATE MAILED: 10/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,113

Applicant(s)

RAMIREZ-VICK, JAIME E.

Examiner

Young J. Kim

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence of the specification of in an application data sheet (37 CFR 1.78(a)(2) and (a)(5)). The specific reference to any prior nonprovisional application must include the relationship (i.e., continuation, divisional, or continuation-in-part) between the applications except when the reference is to a prior application of a CPA assigned the same application number.

The instant specification fails to make reference to the prior application 09/571,084.

Appropriate correction is required.

Drawings

The drawings filed on December 19, 2001 is acceptable.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Varma et al. (U.S. Patent No. 5,622,826, issued April 27, 1997; IDS ref# A2).

Varma et al. disclose a method for immobilizing molecules on surfaces of platinum. The heterobifunctional spacer is linked to the soft metal support via a soft base (Figures and claims). Nucleic acids can be immobilized on said solid support (columns 2-3). The surface containing the immobilized molecules can be used in binding assays (column 7-8). Platinum chips are prepared which is viewed to be inclusive of instant claim 9 (column 10).

Therefore, Varma et al. anticipate the invention as claimed.

Claims 1-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Bamdad et al. (U.S. Patent No. 5,620,850, issued April 15, 1997; IDS ref# A1).

Bamdad et al. disclose an article suitable for use as biosensor element such as SPR chip, X-R-Ch-M-BP-Bmol, in which X represents a functional group that adheres to a gold surface, BP represents a biological binding partner and Bmol is the biological molecule. R is a spacer moiety. X can be thiols, sulfide, disulfide and the like.

Claims 1, 2, 4-6, and 8-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Hefti (U.S. 2002/0009723 A1, published January 24, 2002, priority February 2, 1998).

Hefti discloses an assay system [Abstract; claim limitation 9] comprising a ligand binding solid surface comprising a soft metal solid support, wherein the solid support is selected from *gold*, indium tin oxide, *copper*, *silver*, zinc, tin, antimony gallium, *cadmium*, chromium, manganese, cobalt, iridium, *platinum*, *mercury*, titanium, aluminum, lead, iron, tungsten, nickel,

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tantalum, rhenium, osmium, *thallium* or alloys thereof [0164; claim limitation 1, 2]. The ligand binding solid surface is disclosed as being capable of comprising proteins, *nucleic acid*, small molecules, saccharides, lipids, and any other molecules of interests [0137; claim limitation 11]. The assay system of Hefti is disclosed as being useful for detecting molecular interactions such as, protein/protein; DNA/protein, RNA/protein; *nucleic acid hybridization*, etc. [0138 and 0342; claim limitation 5, 6, 8, and 10]. Heterobifunctional linkers and their attachment chemistry is also disclosed [0340; claim limitation 4].

Therefore, Hefti anticipates the invention as claimed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hefti (U.S. 2002/0009723 A1, published January 24, 2002, priority February 2, 1998) in view of Ribi et al. (U.S. Patent No. 5,491,097, issued February 13, 1996).

Claims 3 and 7 are drawn to an embodiment of the ligand-binding solid surface of claim 1 and its method of making.

Hefti discloses an assay system [Abstract] comprising a ligand binding solid surface comprising a soft metal solid support, wherein the solid support is selected from *gold*, indium tin oxide, *copper*, *silver*, zinc, tin, antimony gallium, *cadmium*, chromium, manganese, cobalt,

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iridium, *platinum*, *mercury*, titanium, aluminum, lead, iron, tungsten, nickel, tantalum, rhenium, osmium, *thallium* or alloys thereof [0164]. The ligand binding solid surface is disclosed as being capable of comprising proteins, *nucleic acid*, small molecules, saccharides, lipids, and any other molecules of interests [0137]. The assay system of Hefti is disclosed as being useful for detecting molecular interactions such as, protein/protein; DNA/protein, RNA/protein; *nucleic acid hybridization*, etc. [0138 and 0342]. Heterobifunctional linkers and their attachment chemistry is also disclosed [0340].

Hefti does not explicitly disclose that the heterobifunctional linkers comprise a hydrocarbon of about 10 to about 40 atoms in length.

Hefti, however, does disclose the well known fact in the art that heterobifunctional linkers can be comprised of straight or branched-chain carbon linkers, heterocyclic linkers, or peptide linkers [0339].

Ribi et al. disclose an array comprising a probe extended by a linker (column 4, lines 5-10), wherein the linker can be comprised of carbon, hydrogen, oxygen, nitrogen, sulfur, phosphorus, halogen, metal, or the like (column 5, lines 40-45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the heterobifunctional linkers of Hefti with the teachings of Ribi et al. to arrive at the invention as claimed for the following reason.

One of ordinary skill in the art would have been motivated to modify the well known knowledge of using straight-chain carbon linkers (per Hefti) in arrays, into a straight-chain of 10 to 30 carbon atoms for the advantage suggested by Ribi et al.:

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“The linker arm may be lengthened to enhance the degree of protein binding in the protein layer. The flexibility of the linker arm will also influence protein binding. The use of rigid linkers such as polypeptides rich in proline reduces the spatial degree of freedom that the specific binding pair member can undergo. Linkers such as polyethylene oxide or polypropylene oxide or combination thereof provide significantly greater freedom of position and orientation of the specific finding pair members” (column 6, lines 23-31).

Therefore, one of ordinary skill in the art at the time the invention was made, would have been motivated to modify the teachings of Hefti in view of the above advantage to lengthen the chain-length of the linker of Hefti for the purpose of increasing the hybridization (or binding) capability with the reasonable expectation of success.

Conclusion

No claims are allowed.

Inquiries

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Young J. Kim whose telephone number is (703) 308-9348. The Examiner can normally be reached from 8:30 a.m. to 7:00 p.m. Monday through Thursday. If attempts to reach the Examiner by telephone are unsuccessful, the Primary Examiner in charge of the prosecution, Dr. Kenneth Horlick, can be reached at (703)-308-3905. If the attempts to reach the above Examiners are unsuccessful, the Examiner's supervisor, Gary Benzion, can be reached at (703) 308-1119. Papers related to this application may be submitted to Art Unit 1637 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1156 OG 61 (November 16, 1993) and 1157 OG 94 (December 28, 1993) (see 37 CFR 1.6(d)). NOTE: If applicant does submit a paper by FAX, the original copy should be retained by applicant or applicant's representative. NO DUPLICATE COPIES SHOULD BE SUBMITTED, so as to avoid the processing of duplicate papers in the Office. All official documents must be

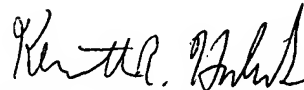
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sent to the Official Tech Center Fax number: (703) 872-9306. For Unofficial documents, faxes can be sent directly to the Examiner at (703) 746-3172. Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Young J. Kim

9/29/03




KENNETH R. HORLICK, PH.D
PRIMARY EXAMINER

9/30/03